A vision for the integrated coastal ocean observing system in Korea

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Outline

• Current status of coastal ocean observing systems in S. Korea
  • Goals and primary issues
  • Operational coastal observation assets in Korea
• Suggestions for integrated COOS
  • Future plans for coastal and science communities
• Summary
Coastal Ocean Observing System

- Satellites; Buoys; Gliders; Floats; Tide gauges; high-freq. radars
- Integration of systems and collected data

Primary issues in Korean coastal regions

- Beach erosion, shoreline change, and trash in nearshore areas
- Red tides
- Freshwater due to coastal river plumes (e.g., dyke)
- Nowcast and forecast of local/regional weather
- Providing the status of ocean in bays, ports, and coastal regions to end users (ship/vessel and coastal/fishery communities) (e.g., circulation and sea water temperature)
- Tidal power station (e.g., Sihwa) and its influence on coastal environment
COOS – CTD and along-track SSHAs

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Coastal CTD observations

- Bi-monthly CTD casts (NFRDI)
- Along-track altimeter-derived sea surface height anomalies (e.g., AVISO)
COOS – Satellites

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations

- GOCI (Geostationary Ocean Color Imagery)
  - 0.5 km and hourly resolutions during the day (8 snapshots/day)
  - CHL/TSS/CDOM L2 level products;
- AVISO geostrophic currents (0.25 deg. 7 daily); OSTIA SST (0.25 deg. daily)
COOS – Buoys (T/S/T-air/P)

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations
- Ocean T/S/T-air/P at every hour
COOS – Buoys (Waves)

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations

- Surface waves information of Tp/Hs/Hmax/Hmin at every hour
COOS – Argo Floats

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations
COOS – Tide gauges

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations

- Sea elevations at 35 stations at every hour
COOS – HF Radars

- Satellites
- Buoys
- Gliders
- Argo-Floats
- Tide gauges
- High-frequency radars
- Other in-situ coastal observations

- Surface current maps in several hours and bays at every hour
Integration of systems and data within COOS

• Integration of COOS systems
  • Data portal and visualization (e.g., multi-layer tools)
  • Coordination between agencies/institutions on goals for observations
  • Minimize duplicate/similar observational efforts

• Integration of COOS data
  • Agreement on data sharing
  • Development of data-derived models and forecast models
  • 4-dimensional data/observations/model outputs (as a dynamical framework) and data analysis
Summary

- Operational coastal ocean observations in Korea include sea elevations, CTD, satellite-derived products (GOCI, SST, and SSHs), high-resolution surface currents, and surface waves.
- Integration of systems and collected data can be possible with common goals in scientific and coastal communities – data sharing, data-derived and forecast models, and 4D data analysis, etc....